

length 82; zygomatic breadth 55; nasals 25; upper molar series 38.

Hab. Jebel Fazogli, Blue Nile. Alt. 3500 feet.

Type. Old male (Stage VIII.). Collected by Mr. A. L. Butler on the 4th May, 1911.

The British Museum possesses a second specimen from Gebel Ain on the White Nile. The only other, geographically neighbouring, species with a black dorsal mark is *scioana*, but that species is at once distinguishable from *butleri* by its greater size, long soft fur, conspicuous dorsal mark, and buff belly.

(33) *Procaravia ruficeps*, H. & E.

♂ (juv.). Port Sudan.

LVIII.—*Descriptions of new Scorpions.* By S. HIRST.

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Genus NEOBUTHUS, nov.

Carapace without distinct keels (with the exception of the ill-defined pair leading forwards from the ocular tubercle). Posterior grooves of carapace very similar to those of the genus *Butheolus*, Sim. Genital operculum with its two valves similar in shape to and almost as large as those of *Nanobuthus*, Poc. Posterior tergites with three keels, the lateral ones being weak. Immobile finger of chelicera with a single tooth on the lower edge. Chela stout, especially the brachium; the rows of granules of the movable finger are weak, and the basal row comes to an end at a short distance from the point of articulation of the finger.

Neobuthus berberensis, sp. n.

Carapace finely granular throughout, the granulation being slightly coarser at the posterior margin on each side of the groove. A pair of weak and indistinct keels runs forward from the ocular tubercle. Median eyes widely separate as in *Nanobuthus andersoni*, Poc. Grooves of the middle of the posterior margin deeper than in *N. andersoni*.

Tergites with the granulation fairly strong at the sides, but rather fine in the middle, and very fine (almost invisible)

anteriorly in each tergite. First and second tergites with traces of the median keel only. Tergites 3-6 with three rather short granular keels, which are restricted to the posterior half of the segments; the median one is much the strongest and is continued forwards by a dark line.

Sternites smooth and shining except for the last one, which is finely granular and has four weak granular keels, the outer pair being indistinct.

Tail.—First segment of tail the widest, the last two segments slightly narrowed. Caudal keels finely granular. In segments 1-3 they are ten in number; the superior and the two uppermost lateral keels are weak in these segments, especially in the third, the superior being weaker in the second and third segments than in the first; median ventral keels of second and third segments strong. In the fourth segment the superior keel is practically absent, weak traces of the anterior part of it alone remaining, and the superior lateral has almost disappeared also; the median lateral and the median ventral keels are absent. Only the inferior lateral keels are present in the fifth caudal segment, and their end granules are enlarged. Intercarinal spaces finely granular; the granulation in the middle of the ventral surface of the fourth segment is slightly coarser than that of the rest of the surface; a number of the granules of the distal end of the ventral surface of the fifth caudal segment are enlarged, and two longitudinal, almost keel-like series of granules, which converge at the proximal end of the segment, run down the centre of it. Upper surface of the segments of the tail rather weakly excavated and either quite smooth or with a few scattered granules only; a shallow dorsal depression is present just before the end of the fifth segment. *Vesicle* very similar in shape to that of *N. andersoni*; it is of fairly large size, but narrower than the last caudal segment, and is smooth, shining, and punctured; a low and inconspicuous tubercle is present at some distance below the sting.

Chela stout. Its femur is smooth below, but the dorsal surface is furnished with fine granules and has a weak granular keel posteriorly and traces of an anterior keel. Tibia much broader than the femur and than the hand and devoid of granulation. Hand smooth and without any granules; its fingers rather short, the movable one being about twice the length of the hand-back and furnished with five(?) weak series of granules (which are difficult to make out); with the exception of the proximal series each of them has a couple of outer granules at the proximal end and a single large granule on the inner side.

Legs.—Fine keels are present on the segments of the legs, those on the patellæ are the strongest.

Pectines with fifteen teeth on one side and sixteen on the other.

Measurements in mm.—Total length 30; length of carapace 3·5, of tail 17·5; width of first segment of tail 2·75, of last segment 2·25.

Colour.—Carapace fuscous, but with some small yellowish patches; the lateral margins and the posterior grooves yellowish. Abdominal tergites fuscous, and each of them is marked with a pair of yellowish almost pyriform spots, one on each side of the dark median keel; lateral margins of tergites also yellow. Tail yellowish, but slightly darkened in places; the fifth segment more deeply infuscate, especially below; lateral caudal keels mostly slightly darkened and the ventral keels very dark in segments 2–5. Vesicle yellow, with a very fine dark median line below and minute dark lateral patches; the apical half of the sting black. Appendages yellow; chela with the femur slightly darkened above and at the sides, the dorsal keels being blackish; tibia also slightly darkened and marked with a dark line posteriorly below; femora and tibiæ of legs with dark lines.

Material.—A single example from Berbera, Somaliland; collected by Mr. G. W. Bury.

Remarks.—This new scorpion seems to me to be most nearly allied to *Nanobuthus andersoni*, Poc., a species which, so far, is only known from a single specimen from Duroor, 60 miles north of Suakin, in the Anglo-Egyptian Sudan. The genital operculum is very similar in shape and size in these two species, and they resemble one another closely in the details of the structure of the keels and the granulation of both trunk and tail. Nevertheless, there are important differences between them, for a small tooth is present on the underside of the immovable finger of the chelicera of the new form and the chela is much stouter than in *Nanobuthus*.

From *Buthcolus*, Sim., this new genus can be readily distinguished by the fact that the antecular area of the carapace slopes forwards only very slightly and by the shape of the tail, which is much more slender and does not increase in size posteriorly.

Lychas (Hemilychas) alexandrinus, sp. n.

Carapace granular throughout. Superciliary crests granular; for some distance they are continued forwards, and then lose themselves in irregular groups of rather large granules,

and close to the anterior margin on either side some of these are arranged in a short keel-like series. Median keels comparatively well developed, especially the posterior median pair, which are quite well marked and strong.

Tergites granular; their lateral keels very short, even in the hinder segments, and in most of the segments they are represented by one or two enlarged granules only.

Anterior *sternites* smooth and shining, and at most with fine granulation at the extreme margin only. Penultimate sternite granular at the sides, but the granulation is very fine except at the margin. Last sternite granular throughout and with four granular keels.

Tail increasing in size posteriorly; last segment slightly swollen. Upper surface of segments 1-4 granular; fifth segment with the upper surface almost smooth anteriorly, but the shallow excavated area in which the median groove of this segment loses itself posteriorly is finely granular. Intercarinal spaces of segments 1-3 distinctly granular; the granules of those of the fourth have run together so as to form a confused network of low smooth ridges, and this causes the segment to appear a little smoother than the preceding ones, but not nearly so smooth as the fifth; the granules between the inferior median keels of the fourth are not fused to the same extent as those of the other intercarinal spaces of this segment. Caudal segments 1-3 each with ten distinct keels, those of the first and second and the upper ones of the third being distinctly granular. Terminal granule of the two upper keels of the first two segments slightly enlarged. Inferior lateral and ventral keels of the third segment smooth. With the exception of the superior all the keels of the fourth segment are smooth, and they are weaker than those of the preceding segments; the keels of the two upper pairs are especially weak and have almost disappeared; the medial lateral is still visible in the anterior two-thirds of the segment, but is exceedingly weak. Fifth caudal segment smooth, shining, and without any trace of keels, but furnished with large punctures. *Vesicle* smooth, shining, and with scattered punctures; the tooth under the aculeus large and blunt.

Chela.—Hand furnished with granules, which are distributed in an irregular manner; it has two well marked finger-keels, the part of them which is situated on the hand itself being granular, but the part on the finger smooth; an outer keel is also present on the dorsal surface of the hand, but it does not reach the apical end. Movable finger more than twice as long as the hand-back and with six median series of granules.

Pectines 20-21 in number.

Measurements in mm.—Total length 31; length of carapace 3·75, of first segment of tail 2, of fifth segment 3·75; width of first segment 2·5, of fifth 2·8.

Colour fawn except for the vesicle, which is a rather deep brown and is much darker than the rest of the body; fingers of hand pale yellow, the hand itself being fawn-coloured.

Material.—A single male example from Alexandria, Northern Territory of Australia; collected by the late Mr. W. Stalker, and presented to the Museum by Sir William Ingram, Bart., and Sir John Forest.

Remarks.—In having the last segment of its tail keel-less and punctured this new scorpion resembles the species of the genus *Isometroides* (which are restricted in distribution to Australia), but differs from them in having a strong tooth under the aculeus, as in *Lychas*. The posterior median keel of the carapace is well developed, instead of being absent or indistinct as is the case in all the species of *Lychas* that I have been able to examine. For these reasons I am placing this new form in a new subgenus—*Hemilychas*.

Lychas ochraceus, sp. n.

Resembling *L. pegleri*, Purc., in having two enlarged granules on the outer side of the enlarged basal granule of the median series (so that there is a row of three granules), also in the presence of three keels on the tergites and in the carination of the tail &c.

I have carefully compared this new scorpion with Dr. Purcell's detailed description of *L. pegleri*, and can only find the following differences:—

Colour of the new species apparently much lighter, both trunk and tail being tawny ochraceous and without any very distinct markings; a pale, rather indistinct, central stripe seems to run the length of the trunk, however. Chela yellowish, the hand being clear yellow, but the fingers tawny.

Anterior *sternites* smooth and shiny, but *sternites* 3-5 are finely granular throughout (the third and fourth being distinctly granular in the middle); outer keels of fifth *sternite* rudimentary; both the inner and the outer keels are finely granular, as is the case in *L. pegleri*.

Pectinal teeth 10 in number; as in *L. pegleri*, the basal one is very greatly enlarged.

Measurements in mm.—Total length 32·5; length of carapace 3·75.

Material.—A female specimen captured at Bethulie, in the Orange River Colony, by Miss Lettie Leppan.

Babycurus ansorgei, sp. n.

Carapace and *tergites* finely granular, as in *B. centurimorphus*, Karsch; anterior edge of carapace almost straight. Last *sternite* practically smooth, the granulation being exceedingly minute; its keels are obsolete, the granules of which they are composed being scarcely visible (when examined under a hand-lens magnifying ten diameters).

Tail moderately stout, the fourth segment being the widest; fifth segment narrowed posteriorly. Intercarinal spaces very finely granular. Ventral keels weak and finely granular; they are a little stronger than is the case in *B. neglectus*, Krpln., and even in the last segments, although very weak, they are still visible under a hand-lens. Upper keels considerably stronger than the ventral ones.

Hand of *chela* a little swollen and slightly wider than the tibia; the finger-keel apparently absent. Movable finger considerably longer than the hand-back; as in *B. centrurimorphus*, five median series of granules are present, besides the long basal series and the very short apical one.

Pectines with 18 teeth.

Measurements in mm.—Total length 55; length of carapace 6, of first segment of tail 3.5, of fourth 5.25, of fifth 7, of hand-back 4.5, of movable finger 6; greatest width of first segment of tail 3.5, of fourth 3.75, of fifth 3.5, of hand 2.75.

Colour reddish brown (of a shade approaching the walnut-brown given in Ridgway's 'Nomenclature of Colours'). Vesicle and the lower surface of the trunk paler in colour. Chela and the legs also reddish brown, the hand of the chela a little paler than the other segments, but its fingers are black.

Material.—A female specimen, collected by Dr. W. J. Ansorge at Dondo, N. Angola, on July 12th, 1908.

Remarks.—Allied to *Babycurus centrurimorphus*, Karsch, from which it differs chiefly in colour.

Tityus funestus, sp. n.

♂.—*Tail* about six times the length of the carapace, the third segment equalling it in length. Posterior segments much higher than is the case in *T. magnimanus*, Poc., and *T. pococki*, Hirst, the fourth, which is the highest, being very much less than twice as long as high [in *T. magnimanus* the fourth segment in the male is about two and a half times as long as high]. The shape of the upper surface of the posterior segments is very different also to what it is in these two

species; at the anterior end of the upper surface of the fourth a deep and conspicuous pit-like excavation is present. Fourth and fifth segments much wider than the anterior ones, the fifth being the widest. Keels almost quite as strong in the male as in the female, but the terminal granule of segments 2-4 is only slightly enlarged and is not so strong as in the female [in *T. pococki* the caudal keels are distinctly weaker in the male than in the female]. Median lateral keel of second segment usually still discernible at the posterior end of the segment. Median keels of ventral surface of second segment approaching one another near the posterior end, and sometimes touching one another, but never fused; in the third segment these keels are fused together posteriorly, so as to form a single median keel, and in the fourth a median keel similar to that of the fifth runs the entire length of the segment, but a lateral keel is present on either side of it at the anterior end; similar lateral keels are sometimes present also in the fifth. Intercarinal spaces finely but distinctly granular.

Hand of chela very much wider than the tibia, but its width is less than the length of the hand-back; fingers lobed, the movable one is about one and two-thirds the length of the hand-back.

Pectinal teeth 13-16 in number.

Movable finger of *hand* with fourteen rows of granules (including the basal one).

Colour varying from reddish brown to very dark brown; whitish specks, similar to those present in young examples of *T. cambridgii championi*, Poc., are often present on the trunk, but they are very faint or absent in the darker examples; last two segments of the tail (and the vesicle also) much darker than the anterior segments; the basal two-thirds of the aculeus pale; legs and chela reddish, they are speckled in the paler examples but unicolorous in the darker ones; fingers of the hand blackish except for the tips, which are yellowish.

♀.—*Tail* very different in shape to that of the male, for it is not incrassate posteriorly, and the posterior segments are not nearly so high; the impression on the dorsal surface of the fourth segment is not nearly so deep nor is it so well defined as in the male.

Hand about as wide as the tibia and with much stronger keels on its surface than in the male; its movable finger is a little more than twice the length of the hand-back, and shows only a very slight tendency to lobation.

Measurements in mm.—♂. Total length 56; length of

carapace 6, of tail about 36, of fourth segment of tail 6·25, of hand-back 5, of movable finger 8·25; width of first segment of tail 3·75, of fifth 4·6, of hand 4·25, of tibia of chela 2·75; height of fourth segment of tail 4·25.

♀. Total length 55·75; length of carapace 6, of tail about 32·5, of fourth segment of tail 5·75, of hand-back 3·5, of movable finger 7·5; width of first segment of tail 3·5, of fifth 3, of hand 2·5; height of fourth segment of tail 3.

Material.—A number of specimens from Chama, Venezuela, including several adults, two of which are of the male sex.

Urodacus hillieri, sp. n.

♂.—Anterior part of *carapace* smooth and very finely punctured; the sides and posterior part of it finely granular.

Tergites finely granular and with the median keel very weak and inconspicuous; as in *U. hoplurus*, Poc., the inner keels of the last tergite scarcely reach the middle, but the outer ones are very long.

Last *sternite* with its pair of keels exceedingly weak and scarcely visible; instead of being rather strong as in *U. spinatus*, Poc.

Tail a little less than five times as long as the carapace; the upper surface and sides finely and sparsely granular, the lower surface of the fifth segment being more distinctly granular [in *U. hoplurus* the surface and sides of the tail are quite smooth and the lower surface of the fifth segment has only a few scattered granules]; terminal tooth of the superior keel of the caudal segments very large; it is not nearly so erect as is the case in *U. spinatus* and *U. hoplurus*, but points backwards. Inferior keels of anterior segments weaker than in *U. spinatus*, but not so weak as in *U. hoplurus*. The inferior median keels of the fourth segment smooth, instead of being weakly granular as in *U. spinatus*. *Vesicle* finely granular.

Hand very similar in shape to that of *U. hoplurus*; it has a row of 19 pores on the under surface (not counting those external to the keel) and two other pores placed on the inner side of and parallel to the first two of the row. *Tibia* with 14–15 pores below.

Legs.—Metatarsus of first leg with a row of 5 or 6 spines, that of the second with 5–7 spines.

Pectinal teeth 22–24 in number.

Measurements in mm.—Total length 96; length of carapace 12, of first segment of tail 7·25, of fifth segment 13; width of first segment 5, of fifth 3·75.

Colour.—Much darker than *U. spinatus* and *U. hoplurus*, the body being walnut-brown. Chela a deep chocolate-brown and considerably darker than the body (with the exception sometimes of the frontal lobes of the carapace). Legs ochraceous, the terminal segments paler than the others.

Material.—Two adult males and two young specimens from Hermannsburg, Central Australia; they were collected by Mr. H. J. Hillier.

Urodacus hoplurus, Poc.

Urodacus hoplurus, Pocock, Ann. & Mag. Nat. Hist. (7) p. 64 (1898).

Subsp. *carinatus*, nov.

Frontal lobes granular and the terminal tooth of the superior keel of the caudal segments very similar in shape and directed upwards in a similar manner to that of the typical form of the species. This new subspecies, indeed, apparently only differs from the typical form in the much greater strength of the superior keel of the caudal segments (which is composed of quite large and distinct granules instead of weak and indistinct ones) and in the less inflated and slightly narrower hand. I think that it is very probable that the difference in the form of the hand is due to the immaturity of the specimen.

Chela.—Under surface of hand with a row of 11 pores, which ends in a group of 5 pores at the base of the finger. Lower surface of tibia with a row of 11–13 pores.

Pectines with 20–21 teeth.

Measurements in mm.—Total length 76·5; length of carapace 9, of fifth segment of tail 10·5, of hand-back 6·25; width of hand 5·25.

Material.—A single example, of the male sex, captured near Hermannsburg, Central Australia, by Mr. H. J. Hillier.

Charilus robinsoni, sp. n.

Apparently the only difference of importance by which this new species can be distinguished from *C. variegatus*, E. Sim., is the number of granular series on the edge of the movable finger, which is 11 instead of 13–14.

As there is not a male example of the typical form of *C. variegatus* in the British Museum collection, I am obliged to compare the new species with males of the subspecies *nigricolor*, Poc. Besides the difference in the number of the rows of granules on the finger, it differs from the male of

this subspecies in the following details, none of which seem to me to be of much importance:—Hand a little more swollen, its lobe not quite so well developed and with the edge thicker; keels of the upper surface slightly stronger; movable finger with a somewhat larger lobe. Upper keels of tail slightly stronger. Colour deep reddish brown; the upper surface of the trunk has no distinct markings, the legs, however, are variegated; tail rather a light reddish brown above, and the vesicle is ochraceous except at the sides, which are dark; hand paler than the trunk, but its keels are blackish.

Pectinal teeth 5 in number.

Measurements in mm.—Total length 44; length of carapace 6, of hand-back 5.4, of movable finger 6.25; width of hand 6.

Material.—A single adult male, found by Mr. H. C. Robinson under moss on a tree at Bukit Besar, Malay Peninsula, on the 27th of August, 1901.

Scorpiops austerus, sp. n.

♂.—Last *sternite* with weak keels, which vary considerably in strength in different specimens; in some they have almost disappeared.

Width of *hand* considerably greater than the length of the hand-back, the lobe greatly developed. Its upper surface is furnished with numerous fine ridges, most of which have fused with one another and form an irregular network; these ridges are smoother than in the female, usually they are obsoletely granular, but sometimes quite smooth. Inner edge of hand very different in appearance to that of *S. insculptus*, Poc.; it is strongly compressed, and a strong keel, which is either smooth or indistinctly granular, runs along the distal half of it. Keel of hand-back usually weakly granular, but sometimes smooth. Finger-keel strong and well developed throughout its length and often quite smooth, but sometimes (especially at the basal end) it is weakly granular. There is no trace of the weak inner crest which is present on the lobe of the hand of *S. insculptus*. Movable finger considerably longer than the hand-back. Pores of the lower surface of the hand and tibia exactly the same in number as in *S. insculptus*.

♀.—*Hand* narrower and its lobe less developed than that of the male, but its width is greater than the length of the hand-back. Its inner edge is not quite so compressed and usually has a weaker keel than is the case in the male. The

ridges on the dorsal surface of the lobe are often distinctly but very finely granular (but sometimes they are smooth), and usually they do not fuse together to the same extent as in the male.

Pectinal teeth 4-6 in number.

Measurements in mm.—♂. Total length 41; length of carapace 6, of fifth segment of tail 5·6, of hand-back 5, of movable finger 7; width of hand 7.

♀. Total length 42; length of carapace 6·75, of fifth segment of tail 6, of hand-back 5, of movable finger 6·5; width of hand 6.

Colour entirely dark.

Material.—A large number of specimens of both sexes from the Kulu District, Himalayas.

S. crassimanus, Poc. (a species which so far is only known from a single example of the female sex, without any locality), is closely allied to *S. austerus*, sp. n., but the granules of the upper surface of the hand are all separate and distinct, whilst the finger-keel is coarsely granular and is interrupted at the base of the finger; the other keels of the hand and tibia also are more coarsely granular than in *S. austerus*. The shape of the inner edge of the hand is very similar in these two species.

Scorpiops tibetanus, sp. n.

♂.—Last *sternite* with the central keels better developed than those of *S. austerus*, sp. n.; the keels of the tail also, especially the ventral ones, are much stronger than they are in that species or in *S. crassimanus*, Poc. Inner edge of *hand* compressed and furnished with a keel, the distal part of which is smooth; but this keel is not nearly so well developed as it is in the male of *S. austerus*. Finger-keel only very indistinctly granular, but not so smooth as in *S. austerus*. Sculpturing of the dorsal surface of the lobe consisting of a number of series of rather fine granules; these series are arranged in a reticulate fashion, but are not fused with one another; the sculpturing is more like that of some of the female examples of *S. austerus* than the males. Fingers of hand very different in shape to those of the male of *S. austerus*, the movable one having a much larger lobe. Keel of the anterior edge of the upper side of the tibia and femur of the chela stronger than in *S. austerus*. Pores of lower surface of hand and tibia exactly as in *S. austerus*.

Pectines with 7-8 teeth.

Measurements in mm.—Total length 59; length of carapace 7.75, of fifth segment of tail 8, of hand-back 6, of movable finger 7.5; width of hand 6.75.

Colour blackish; the hand, however (with the exception of the fingers and keels), is reddish brown.

Material.—A single adult specimen, of the male sex, collected at the Chaksam Ferry, Tsangpo Valley, Tibet, by Lieut.-Colonel L. A. Waddell, C.B.

Remarks.—In addition to the differences which are given above, I may point out that this species is much larger than *S. austerus*, sp. n. It can be distinguished from *S. crassimanus*, Poc., by the structure of the finger-keel, which is almost smooth, by the presence of keels on the last sternite, and by the greater strength of the keels of the tail.

LIX.—*Some new Species of the Coleopterous Genus Anomala from Southern India.* By GILBERT J. ARROW.

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ABOUT seventy species of the enormous genus *Anomala* have already been described from British India, and over sixty of these are known to me, as well as a very large number which are still undescribed. I hope in a future volume of the 'Fauna of British India' series to attempt an orderly revision of this mass of closely related insects, whose nomenclature is at present in very great confusion. As this work cannot be completed for a considerable time, I propose to publish preliminary descriptions of some of the new forms, as these are constantly sent to me for determination and it is undesirable to circulate unpublished names.

I have received two important collections from Southern India, one of them made by Mr. H. Leslie Andrewes in the Nilgiri Hills, the other by M. du Breuil in Madura, the latter collection being the property of Baron Paul de Moffarts. The fauna of Southern India is the most purely Indian to be found within the limits of the Empire; the species are nearly all peculiar to that area, and in many cases form groups of closely related forms without any known representatives outside the area. For this reason it has not been possible to compare many of the new species figuring here with any others previously known.

The types of all the following species are in the British *Ann. & Mag. N. Hist. Ser. 8. Vol. viii.*